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EXAMINER

SUCHFIELD, GEORGE A

ART UNIT

PAPER NUMBER

3672

DATE MAILED: 01/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/841,437

Applicant(s)

STEGEMEIER ET AL.

Examiner

George Suchfield

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 December 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 531-610, 623-625, 665-706 and 5396-5398 is/are pending in the application.
- 4a) Of the above claim(s) 535, 536, 576, 577, 610, 623-625, 665-706 and 5398 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 531-534, 537-575, 578-609, 5396 and 5397 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 531-610, 623-625, 665-706 and 5396-5398 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 05 March 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7-17.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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1. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: No antecedent basis can be found in the specification for the specific pressure-temperature relationship formulas set forth in claims 571 and 572.

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 531-609, 5396 and 5397 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over copending applications (including the present application):

09/840,936; 09/840,937; 09/841,000; 09/841,060; 09/841,061; 09/841,127; 09/841,128; 09/841,129; 09/841,130; 09/841,131; 09/841,170; 09/841,193; 09/841,194; 09/841,195; 09/841,238; 09/841,239; 09/841,240; 09/841,283; 09/841,284; 09/841,285; 09/841,286; 09/841,287; 09/841,288; 09/841,289; 09/841,290; 09/841,291; 09/841,292; 09/841,293; 09/841,294; 09/841,295; 09/841,296; 09/841,297; 09/841,298; 09/841,299; 09/841,300; 09/841,301; 09/841,302; 09/841,303; 09/841,304; 09/841,305; 09/841,306; 09/841,307; 09/841,308; 09/841,309; 09/841,310; 09/841,311; 09/841,312; 09/841,429; 09/841,430; 09/841,431; 09/841,432; 09/841,433; 09/841,434; 09/841,435; 09/841,436; 09/841,437; 09/841,438; 09/841,439; 09/841,440; 09/841,441; 09/841,442; 09/841,443; 09/841,444; 09/841,445; 09/841,446; 09/841,447; 09/841,448; 09/841,449; 09/841,488; 09/841,489; 09/841,490; 09/841,491; 09/841,492; 09/841,493; 09/841,494; 09/841,495; 09/841,496; 09/841,497; 09/841,498; 09/841,499; 09/841,500; 09/841,501; 09/841,502; 09/841,632; 09/841,633; 09/841,634; 09/841,635; 09/841,636; 09/841,637; 09/841,638; and 09/841,639.

Although the conflicting claims are not identical, they are not patentably distinct from other. For example, claim 2200, currently pending in S.N. 09/841,000 is an obvious variation of claim 564 pending herein, and claim 2239 currently pending in 09/841,000 is an obvious variation of claim 565 pending herein. More specifically, both claim 564 and 2200 call for heating a section of a formation to increase the permeability to greater than about 100 millidarcy while controlling the pressure as a function of temperature, or controlling the temperature as a function of pressure; the precise extent of formation heated, i.e., a majority of the section or a majority of a part of the formation is deemed a matter of choice or design based on, e.g., formation characteristics or economic feasibility. Similarly, both claim 565 and 2239 call for heating a section of a formation to increase the permeability substantially uniformly while controlling the pressure as a function of temperature, or controlling the temperature as a function of pressure; the precise extent of formation heated, i.e., a majority of the section or a majority of a part of the formation is deemed a matter of choice or design based on, e.g., formation characteristics or economic feasibility.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

4. Claims 531-609, 5396, 5397 are specifically provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 531-609 of copending Application No. 09/841,430. Although the conflicting claims are not identical, they are not patentably distinct from each other because the hydrocarbon-containing formation treated by the method of claim 531 and 570 of this pending application is deemed broad enough

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to encompass or comprise the coal formation of claim 531 and 570 of the copending application. Otherwise, the remaining claims of both this and the copending application appear to correspond, with the additional limitation in claims 5396 and 5397 to 20 heat sources per recovery well deemed an obvious matter of choice or design based on, e.g., the characteristics, properties and/or areal extent of particular hydrocarbon formation encountered in the field.

Claims 532-569, 571-609, 5396 and 5397 appear to essentially correspond to claims 532-569 and 571-609 of the copending '430 application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 531-534, 540, 542-553, 555, 556, 564 and 565 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ljungstrom (2,923,535).

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Ljungstrom discloses a process for heating a hydrocarbon formation, which may comprise oil shale or coal utilizing one or more heaters (22) wherein the heat imparted causes volatilization, pyrolysis and/or gasification of hydrocarbon constituents, which are subsequently produced to the surface as production fluids or “mixture” comprising condensible hydrocarbons. Ljungstrom specifically discloses that the temperature “may be controlled depending on ... the pressure maintained or permitted to build up” (col. 2, lines 41-45). In addition, the temperature and pressure curves of Figures 10 and 11 appear to indicate a direct relationship between temperature and pressure within the coal formation. Thus, Ljungstrom inherently or obviously controls the temperature in the formation as function of pressure, as called for in claim 531.

As per claim 532, in view of the large number of heat input wellbores or “sources”, relative to a recovery wellbore (26), as illustrated in Figures 2-5 and 9, it is deemed at least some overlap or “superposition” of the heat applied will necessarily or obviously occur, especially in ensuring that the entire coal or oil shale formation extent is heated - which appears necessary in order to provide the “exhaust channels” (40,42) in the coal seam (col. 3, line 48 - col. 4, line 9)

As noted above, pyrolysis clearly occurs in the hydrocarbon formation, as called for in claim 533; the recited temperature range therein of 270oC - 400oC is deemed to encompass the exemplary temperature range in Ljungstrom (col. 2, lines 25-42) of 100oC - 250oC for the electrical heating phase, followed by 300oF - 400oC, with any difference therebetween deemed an obvious matter of choice or design based on, e.g., the characteristics or type of the particular coal formation encountered in the field.

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As per claim 540, at least a portion of the heating effected in Ljungstrom is effected “substantially by conduction”, e.g., in the widening of the porous coal or oil shale layer (30) (see col. 3, lines 29-36).

Regarding claims 542-553, 555 and 556 it is deemed that the myriad hydrocarbon product mixtures recited in these claims would necessarily or obviously occur in carrying out the heating process of Ljungstrom, i.e., the precise composition of the product fluids is seen as dictated by the type of coal or oil shale naturally occurring in the particular hydrocarbon formation actually encountered in the field. Moreover, it would be an obvious matter of choice to operate the Ljungstrom process to minimize what would be considered refinery contaminants, such as sulfur, nitrogen and/or oxygen in the product mixtures. Similarly, it would be obvious to reduce or minimize the amount of asphaltenes in the product mixtures for optimum downstream refining. Also, in the event that the particular coal or oil shale deposit encountered yields ammonia gas, it would be an obvious expedient to utilize it in a commercial process such as fertilizer production.

The heating process of Ljungstrom also causes an increase in permeability of the hydrocarbon formation (note col. 2, lines 1-24). It is further deemed that such permeability increase will inherently or obviously be substantially uniform, as called for in claim 565, e.g. during an overall field heating process, as illustrated in Figures 2-5. Such permeability increase is deemed to necessarily or inherently encompass an increase to “greater than about 100 millidarcy”, as called for in claim 564; alternatively, to increase the permeability to greater than 100 millidarcy would have been an obvious matter of choice in order to ensure adequate fluid flow through the formation.

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As per claim 534, note the use of electrical heating elements (22) in Ljungstrom.

8. Claims 539, 541, 560, 566, 567 and 5396 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ljungstrom (2,923,535).

The precise heating rate recited in claim 539 is deemed obvious matters of choice or design, especially in carrying out the embodiment in Ljungstrom of controlling and/or maintaining the temperature in the coal or oil shale formation within a specific operating range (col. 2, lines 25-48)

The thermal conductivity recited in claim 541 is deemed an obvious matter of choice or design based on, e.g., the quality and type of the coal or oil shale present and/or the matrix characteristics of the particular coal or oil shale formation encountered in the field.

The steps of claims 560 and 566, such as controlling the heat or pressure in the formation, are deemed obvious matters of choice or design in carrying out the process of Ljungstrom, consistent with one of the overall objectives of Ljungstrom to control the heating process (col. 2, lines 25-55).

Regarding claim 567 and 5396, Ljungstrom in the embodiment of Figures 2-5 and 9, discloses that myriad heating wellbores (20) may surround a production wellbore or shaft (26). The precise number of such heating wells provided, as called for in these claims, is deemed an obvious matter of choice or design in carrying out the process of Ljungstrom based on, e.g., the overall areal extent of the hydrocarbon formation(s) encountered in exploiting an actual reservoir encountered in the field.



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9. Claims 554, 558, and 559 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ljungstrom (2,923,535) as applied to claim 531 above, and further in view of Tsai et al (4,299,285).

While Ljungstrom does not disclose the presence of hydrogen in the coal or oil shale heating production effluent, Tsai et al (col. 5, line 52 - col. 6, line 15) clearly discloses that gasification/volatilization products resulting from heating and/or gasifying a coal formation include hydrogen.

Accordingly, it is deemed that the volatilized/gasified coal or oil shale production effluent produced in the process of Ljungstrom will obviously include a hydrogen component, as taught by Tsai et al, with the precise amount of hydrogen present, as called for in claims 554 and 558, deemed an obvious expedient or matter of choice to one of ordinary skill in the art to which the invention pertains, based on, e.g., the actual intended use of the production effluent, such as a feed stream to a synthetic natural gas production facility or as process heat gas, as called for in the claims.

As per claim 559, it would have further been an obvious expedient or matter of choice to monitor the production effluent of Ljungstrom for hydrogen content, especially since Ljungstrom makes specific reference to controlling the process based on, inter alia, "the products desired" (col. 2, lines 42-44).

10. Claims 554, 558, 559, 561 and 562 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ljungstrom (2,923,535) as applied to claim 531 above, and further in view of Justheim (3,766,982) .

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Justheim'982 injects hydrogen into the heated coal formation to hydrogenate the volatilized/pyrolyzed hydrocarbons evolved; and the hydrogen provided may further be obtained from production fluids obtained from the coal formation (col. 3, lines 1-9).

Accordingly, it would have been obvious to one of ordinary skill in the art to which the invention pertains, to similarly inject hydrogen into the heated coal or oil shale formation in the process of Ljungstrom, e.g., in the vicinity of the recovery wellbores, and provide the hydrogen from the production effluent, as taught by Justheim, in order to effect a partial hydroconversion/hydrotreating of the volatilized, pyrolyzed and/or gasified hydrocarbons prior to production in order to render the production effluent more suitable for further refining or above-ground processing/conversion, as called for in claims 561 and 562 .

As per claims 554 and 558, in carrying out the injection of hydrogen into the coal or oil shale formation to effect hydrogenation of the volatilized/pyrolyzed hydrocarbons evolved, in the modified process of Ljungstrom, the production fluids actually produced will necessarily or obviously include a partial pressure of hydrogen, with the precise amount thereof deemed an obvious matter of choice or design, based on, e.g., the particular coal or oil shale formation encountered.

As per claim 559, insofar as Justheim strives to control the amount of hydrogen present throughout the process to minimize "danger of accidental explosions", it would have been an obvious expedient or matter of choice to monitor the partial pressure of hydrogen at the production well(s) using conventional or commercially-available monitoring means, in carrying out the overall process of Ljungstrom, as modified by Justheim.

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11. Claim 563 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ljungstrom (2,923,535) in view of Justheim (3,766,982) as applied to claim 561 above, and further in view of Hoekstra et al (4,353,418) or Garrett (3,661,423).

It would have been obvious to one of ordinary skill in the art to which the invention pertains to further hydrogenate the partially-hydrogenated hydrocarbons produced from the heating process of Ljungstrom, as modified by Justheim'982, with hydrogen circulated or produced by the heating process of Justheim, as taught by Hoekstra et al (note the Abstract and figure) or Garrett (col. 4, lines 50-54), in order to improve the overall quality or advance the refining/processing of the volatilized, pyrolyzed and/or gasified hydrocarbon fluids produced by the process of Ljungstrom, as modified by Justheim'982, by fully or completing hydroconverting/hydrogenating refinement process.

12. Claims 568 and 569 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ljungstrom (2,923,535), as applied to claim 531 above, and further in view of Salomonsson (2,914,309) or Camacho et al (4,067,390).

It would have been obvious to one of ordinary skill in the art to which the invention pertains to carry out the multiple well heating embodiment of Ljungstrom (Figures 2-5 and 9) by providing or laying out the wells in a triangle, and/or repeating triangle pattern, as disclosed by Salomonsson (note Figure 3 and col. 3, lines 5-34) or Camacho et al (note Figure 8) in order to enhance the overall heating/pyrolysis effected by optimizing well location.

13. Claims 531 and 534 are rejected under 35 U.S.C. 102(b) as anticipated by Elkins (2,734,579).

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Elkins discloses a process of heating a hydrocarbon formation comprising a bituminous deposit, such as tar sands, utilizing one or more heaters, such as an electrical heater (note col. 2, lines 24-68). Production effluent is obtained from the formation which comprises a mixture of liquid hydrocarbons and gaseous products of combustion. During part of the heating process, the temperature in the formation is clearly controlled “as a function of pressure”, as called for in claim 531, specifically, the temperature is controlled as a function of the injection gas pressure (col. 3, lines 13-47).

14. Claims 533, 542-553, 555, 556, 557, and 564-566 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Elkins (2,734,579).

Elkins maintains the temperature during the in situ combustion phase of the heating process within a temperature range of 400-1,200oF, which corresponds to a temperature range of 204-648oC. Such temperature range encompasses the recited temperature range in claim 533 of 270-400oC, with any difference therebetween deemed an obvious matter of choice or design based on, e.g., the characteristics or type of the particular tar sands formation encountered in the field.

Regarding claims 542-553, 555 and 556, it is deemed that the myriad hydrocarbon product mixtures recited in these claims would necessarily or obviously occur in carrying out the heating process of Elkins, i.e., the precise composition of the product fluids is seen as dictated by the type of tar sands naturally occurring in the particular bituminous hydrocarbon formation actually encountered in the field. Moreover, it would be an obvious matter of choice to operate the Elkins process to minimize what would be considered refinery contaminants, such as sulfur, nitrogen and/or oxygen in the product mixtures. Similarly, it would be obvious to reduce or

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minimize the amount of asphaltenes in the product mixtures for optimum downstream refining. Also, in the event that the particular tar sands deposit encountered yields ammonia gas, it would be an obvious expedient to utilize it in a commercial process such as fertilizer production.

As per claim 557, Elkins (col. 2, lines 10-23) discloses that during the process, the injected gas pressure is maintained between 250-500 psi, or higher. Such pressure range is deemed to inherently or obviously encompass the recited range of “at least about 2.0 bar absolute”, with any difference therebetween deemed an obvious matter of choice or design based on, e.g., routine experimentation for economic feasibility, the quality and type of the tar sands or solid bituminous material present and/or the matrix characteristics of the particular bituminous formation encountered in the field.

The heating process of Elkins also causes an increase in permeability of the hydrocarbon formation (note col. 2, line 69 - col. 3, line 8). It is further deemed that such permeability increase will inherently or obviously be substantially uniform, as called for in claim 565, e.g., during an overall field heating process. Such permeability increase is deemed to necessarily or inherently encompass an increase to “greater than about 100 millidarcy”, as called for in claim 564; alternatively, to increase the permeability to greater than 100 millidarcy would have been an obvious matter of choice in order to ensure adequate fluid flow through the formation.

As per claim 566, Elkins (col. 2, lines 69-71) indicates that the region of the tar sands formation in which both the heater and in situ combustion phases have been carried out “is completely cleaned of all hydrocarbon and water content”. Accordingly, it is deemed that greater than 60% by weight of the Fischer Assay hydrocarbons will inherently or obviously be recovered, as called for in claim 566.

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15. Claims 539 and 541 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elkins (2,734,579).

The precise heating rate recited in claim 539 is deemed obvious matters of choice or design during the phase of the process of Elkins (col. 2, lines 24-68) deploying the well heater(s) based on, e.g., routine experimentation for economic feasibility and/or the characteristics or type of the particular tar sands formation encountered in the field.

Similarly, the thermal conductivity recited in claim 541 is deemed an obvious matter of choice or design based on, e.g., the quality and type of the tar sands or solid bituminous material present and/or the matrix characteristics of the particular formation encountered in the field.

16. Claims 554, 558, 559, 561 and 562 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elkins (2,734,579) as applied to claim 531 above, and further in view of Justheim (3,766,982).

Justheim'982 injects hydrogen into a heated hydrocarbon formation, such as "bituminous sands" (col. 3, lines 10-14) to hydrogenate the volatilized/pyrolyzed hydrocarbons evolved; and the hydrogen provided may further be obtained from production fluids obtained from the coal formation (col. 3, lines 1-9).

Accordingly, it would have been obvious to one of ordinary skill in the art to which the invention pertains, to similarly inject hydrogen into the heated coal or oil shale formation in the process of Elkins, e.g., in the vicinity of the recovery wellbores, and provide the hydrogen from the production effluent, as taught by Justheim, in order to effect a partial hydroconversion/hydrotreating of the volatilized, pyrolyzed and/or gasified hydrocarbons prior

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to production in order to render the production effluent more suitable for further refining or above-ground processing/conversion, as called for in claims 561, 562 .

As per claims 554 and 558, in carrying out the injection of hydrogen into the coal or oil shale formation to effect hydrogenation of the volatilized/pyrolyzed hydrocarbons evolved, in the modified process of Elkins the production fluids actually produced will necessarily or obviously include a partial pressure of hydrogen, with the precise amount thereof deemed an obvious matter of choice or design, based on, e.g., the particular coal or oil shale formation encountered.

As per claim 559, insofar as Justheim strives to control the amount of hydrogen present throughout the process to minimize “danger of accidental explosions”, it would have been an obvious expedient or matter of choice to monitor the partial pressure of hydrogen at the production well(s) using conventional or commercially-available monitoring means, in carrying out the overall process of Elkins, as modified by Justheim.

17. Claim 563 is rejected under 35 U.S.C. 103(a) as being unpatentable over Elkins (2,734,579) in view of Justheim (3,766,982) as applied to claim 561 above, and further in view of Hoekstra et al (4,353,418) or Garrett (3,661,423).

It would have been obvious to one of ordinary skill in the art to which the invention pertains to further hydrogenate the partially-hydrogenated hydrocarbons produced from the heating process of Elkins, as modified by Justheim’982, with hydrogen circulated or produced by the heating process of Justheim ,as taught by Hoekstra et al (note the Abstract and figure) or Garrett (col. 4, lines 50-54), in order to improve the overall quality or advance the refining/processing of the volatilized, pyrolyzed and/or gasified hydrocarbon fluids produced by

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the process of Ljungstrom, as modified by Justheim'982, by fully or completing hydroconverting/hydrogenating refinement process.

18. Claims 568 and 569 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elkins (2,734,579), as applied to claim 531 above, and further in view of Salomonsson (2,914,309) or Camacho et al (4,067,390).

It would have been obvious to one of ordinary skill in the art to which the invention pertains to deploy a plurality of heating/injection and production wells in the process of Elkins and further provide or lay out the wells in a triangle, and/or repeating triangle pattern, as disclosed by Salomonsson (note Figure 3 and col. 3, lines 5-34) or Camacho et al (note Figure 8), in order to apply the overall heating/pyrolysis effected by the Elkins process over the entire areal extent of the bituminous or tar sands formation, as actually encountered in the field.

19. It is noted that claims 537, 538, and 570-609 have been rejected only on the grounds of double patenting and/or 35 USC 112(2).

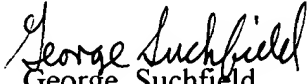
Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Suchfield whose telephone number is 703-308-2152. The examiner can normally be reached on M-F (6:30 - 3:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bagnell can be reached on 703-308-2151. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-7687 for regular communications and 703-305-7687 for After Final communications.



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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.

  
George Suchfield  
Primary Examiner  
Art Unit 3672

gs  
January 28, 2003